

Green Proving Ground

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Greater Southwest Region

“The Sustainable Solution”

Sustainability: GSA and Industry Innovative Practices

Kevin Myles

Program Manager

Region 7

What Are We Doing?

- All new construction targets LEED Gold certification
- EPA top-10 green power partner for renewable energy purchases
- R7 invests in up to 50% renewable wind energy for many of its buildings
- Installed advanced energy metering systems (monitored daily)



What Are We Doing? (Cont.)

- Building a net-zero energy LPOE
- Employed ESPC contracts to deliver ARRA projects and leverage ARRA funding
- Completed two wind resource studies and is conducting two more
- Establishing a Green Proving Ground



What Are We Doing? (Cont.)

- GSA established a National Sustainability Council and Chief Greening Officer position
- Sustainability is part of every senior executive's performance evaluation
- GSA created an Office of High Performance Green Buildings





What Are We Doing? (Cont.)

- Administrator Johnson promotes practices leading to ZEF
- GSA is implementing sustainability into its existing building portfolio
 - P-100/Whole Building Design Guide/Green Leasing SFO
- R7 is currently the most energy efficient region, based on BTU per square foot



Why Are We Doing It?

Executive Order 13423

- Reduce energy use by 3% per year
- Reduce energy use by 33% by 2015
- Reduce water use by 16% by 2015



Why Are We Doing It? (Cont.)

Energy Independence and Security Act 2007

- Reduce fossil fuel use in new buildings and major renovations by 55% in 2010; 100% by 2030
- All new leased space to be ENERGY STAR qualified by 2010
- At least 30% of hot water production should be from a solar water heater



Why Are We Doing It? (Cont.)

Executive Order 13514

- Targets reduction of GHGs by 2020
- Requires increased energy efficiency
- Conserve water, reduce waste, sustainable communities
- Use federal purchasing power to leverage promotion of environmentally responsible products and technologies





Facts and Figures

- EISA requires 7.5% renewable energy by 2013
 - R7 is currently at 12.5% (and has been since 2009). Many buildings in Texas have 50% wind power.
- EISA requires installing advanced meters
 - R7 installed advanced meters prior to this legislation. (Installed and operational for a number of years now.)



Facts and Figures (Cont.)

- R7 has 45 EPA ENERGY STAR-certified buildings (top 25%)
- Federal law requires net-zero energy buildings by 2030
 - R7 is in the process of building a net-zero energy building
- R7 currently has 16 buildings registered with the USGBC to obtain LEED certification (registered, not certified yet).

ESPC and ARRA

- The region was allocated \$47.7 million ARRA funding
 - The bulk of this work is for energy efficiency and sustainability
- Using the ESPC process, the region awarded \$68 million of work
- The region received ARRA funding for 27 buildings





ESPC and ARRA (Cont.)

- The region awarded ESPC contracts for work in 75 buildings due to leveraged ESPC/ARRA
- R7 buildings implemented 16 renewable energy measures using ESPC contracts
- One 20kv wind turbine in New Mexico

ESPC and ARRA (Cont.)

- Fourteen solar PV systems producing from 17.5 kW to 504 kW
- Several solar hot water systems
- Two thin-film solar roofs





Wind Studies

- R7 has conducted two wind resource studies with NREL in Donna and Anzaldus, Texas
- These studies support the installation of 1.5 mega watt wind turbines to help power these facilities
- Paybacks were in the 10-year and under range
- R7 is conducting two more wind studies with NREL (closer to the Gulf Coast) where sea breezes are anticipated to provide a stronger wind resource with shorter paybacks

Rocky Mountain Region

"The Sustainable Solution"

GSA = Green Proving Ground

Curtis Berg

Recovery PMO

Region 8




GSA = Green Proving Ground

- An evolving program from Central Office driven by Chief Greening Officer
- GSA wants to be leaders for emerging and innovative technologies (beta test)
- More direction to come to guide national efforts
- For now, Region 8 approach and examples...



R8 Green Proving Ground

- Innovative/Emerging Technologies Project Team
 - Project managers and leadership reps from all service centers meet weekly
- Utilize the BA63 “Rebate” fund
 - Fueled by rebates from regional projects and RECs sales from 1MW PV park at DFC
- Typical projects showcase emerging technology — must be innovative by nature
- Document lessons learned, efficiency gains, and best practices



Sample Project: Window Comparison Study

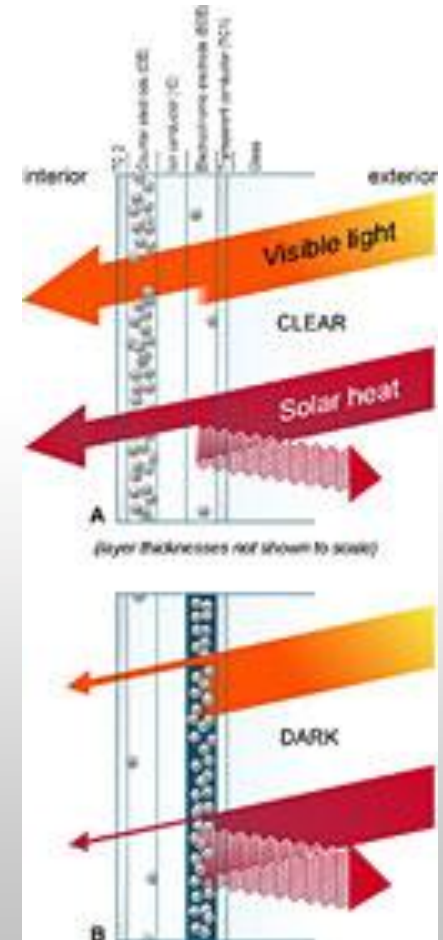
Electro-chromic Glazing, *Sage Glass*

- Uses electricity to tint windows
- Involves BAS controls to optimize performance
- Requires wiring
- This is a currently showcased window option
- Costly, difficult installation unless new construction

Thermo-chromic Glazing, *Ravenbrick*

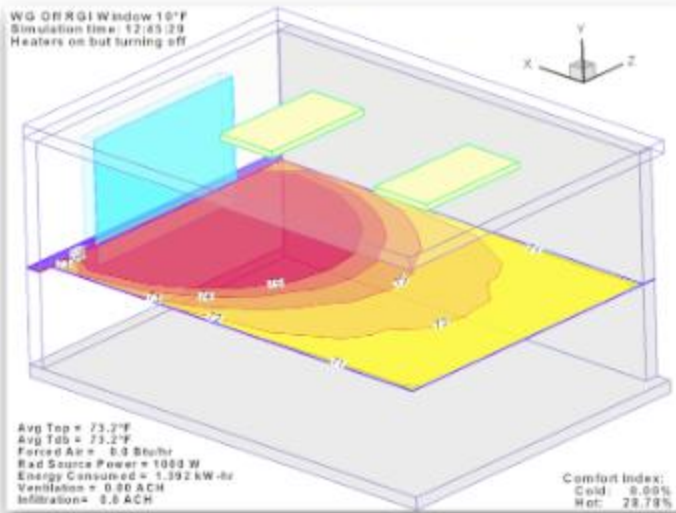
- No electricity is needed
- No wiring is needed
- Tinting is actuated by surface temperature
- Glazing selected by site's micro-climate and building orientation
- Less costly, good for existing buildings

Smart Glazing Images



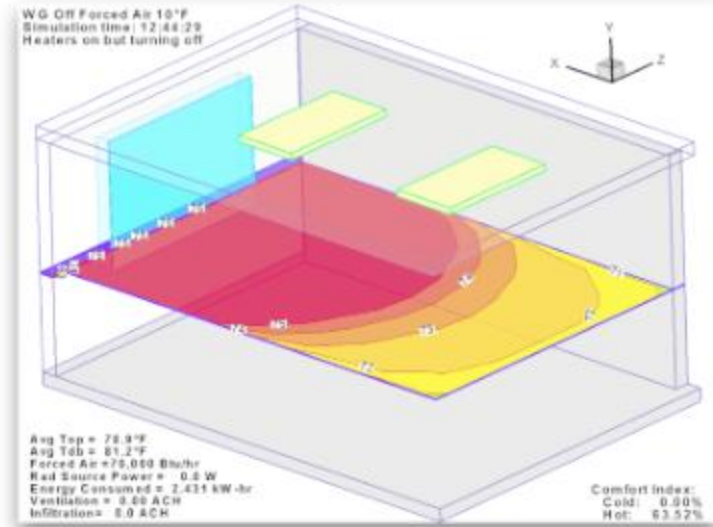
Other Emerging Technologies for GSA

Radiant/Energized glass



Radiant Glass

- Even heat
- 1.4 kWh energy consumption

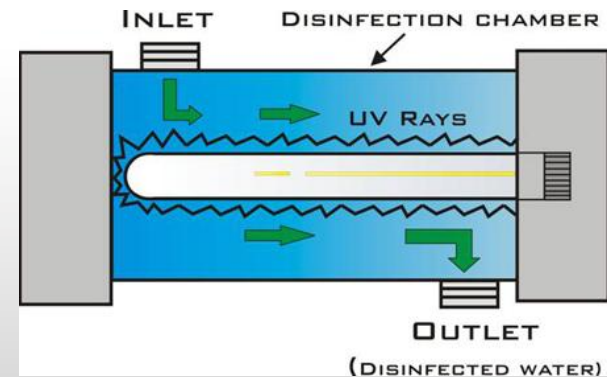
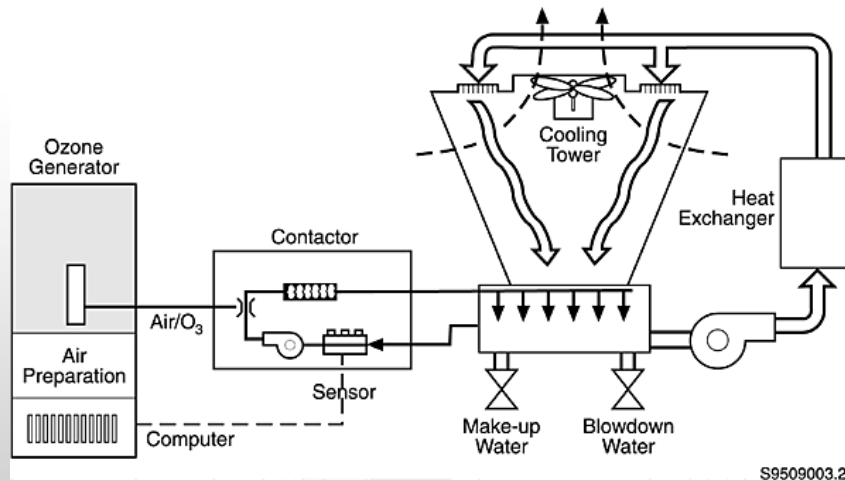


Standard Forced Air

- Uneven heat
- 2.4 kWh energy consumption

Other Emerging Technologies for GSA

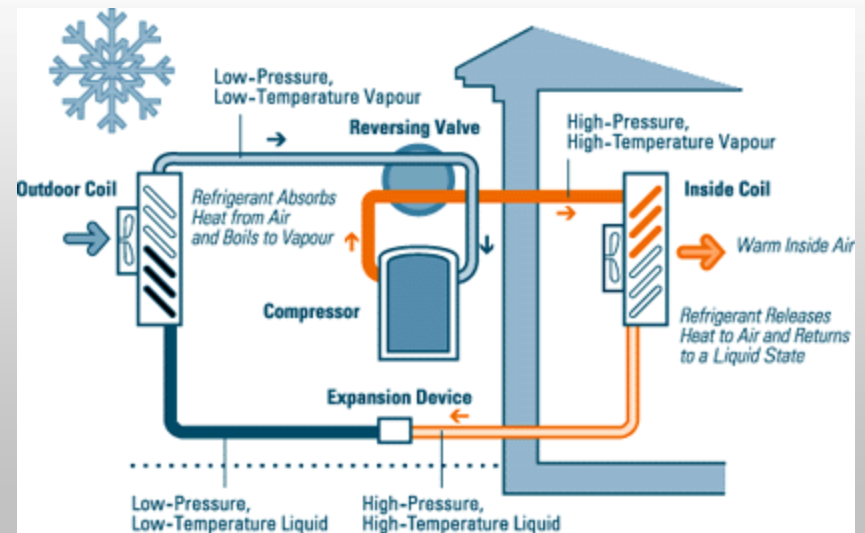
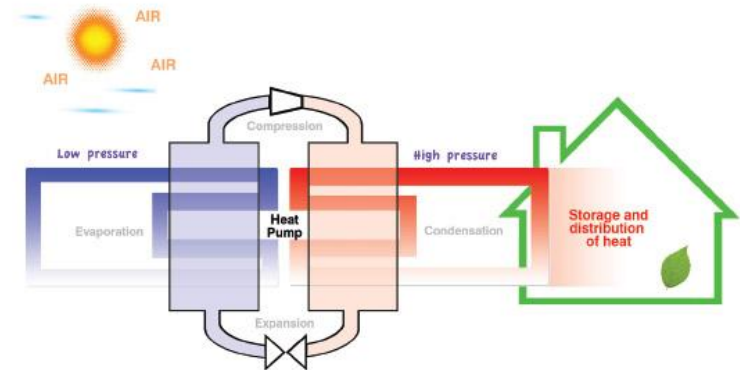
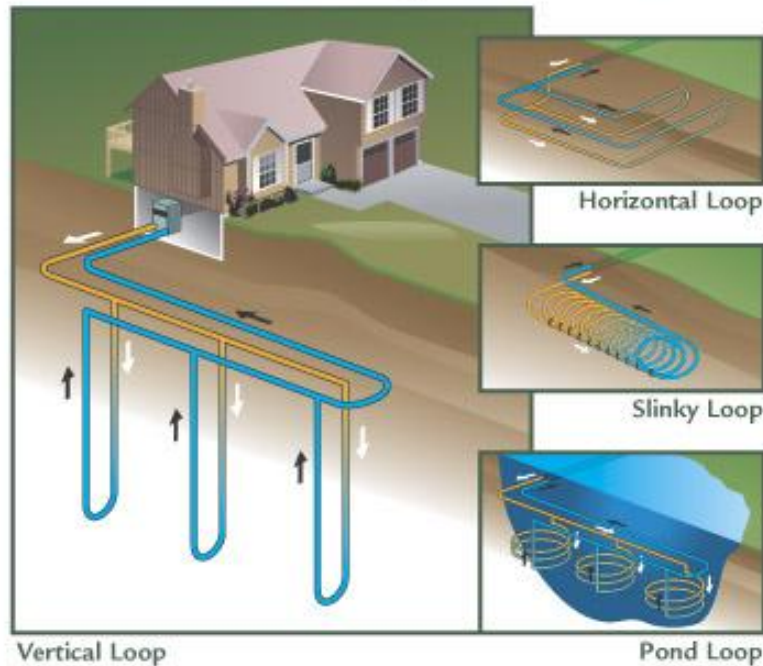
Non-traditional water treatment



Other Emerging Technologies for GSA

Gas-fired heat pumps

Geothermal Energy for the Home



Other Emerging Technologies for GSA

Building-integrated PV (BiPV)



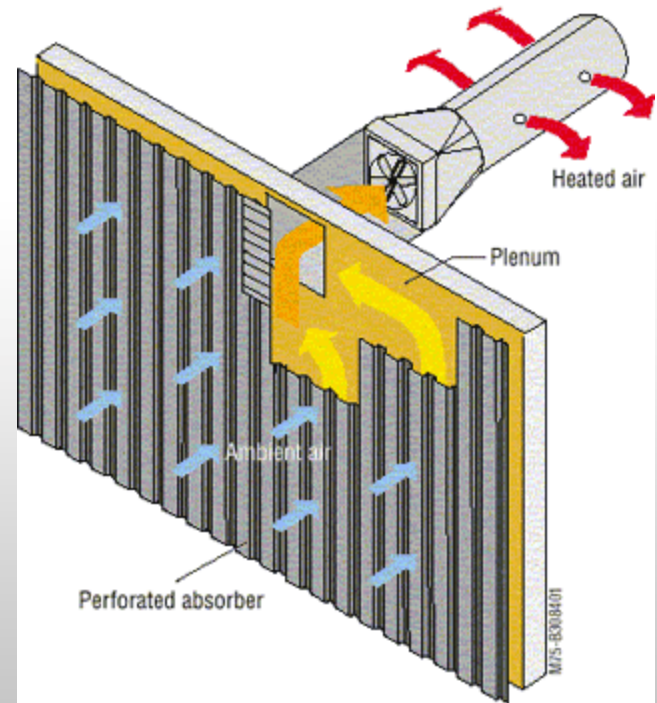
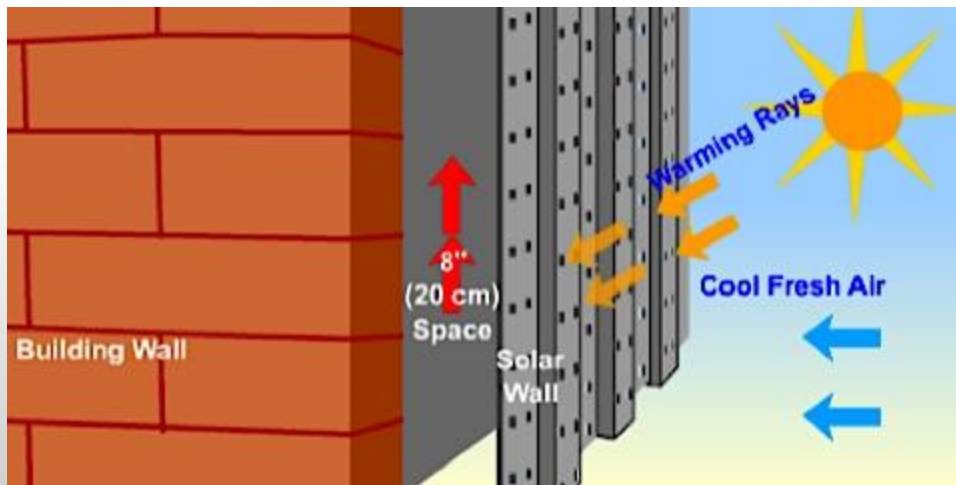
solar film



PV glazing

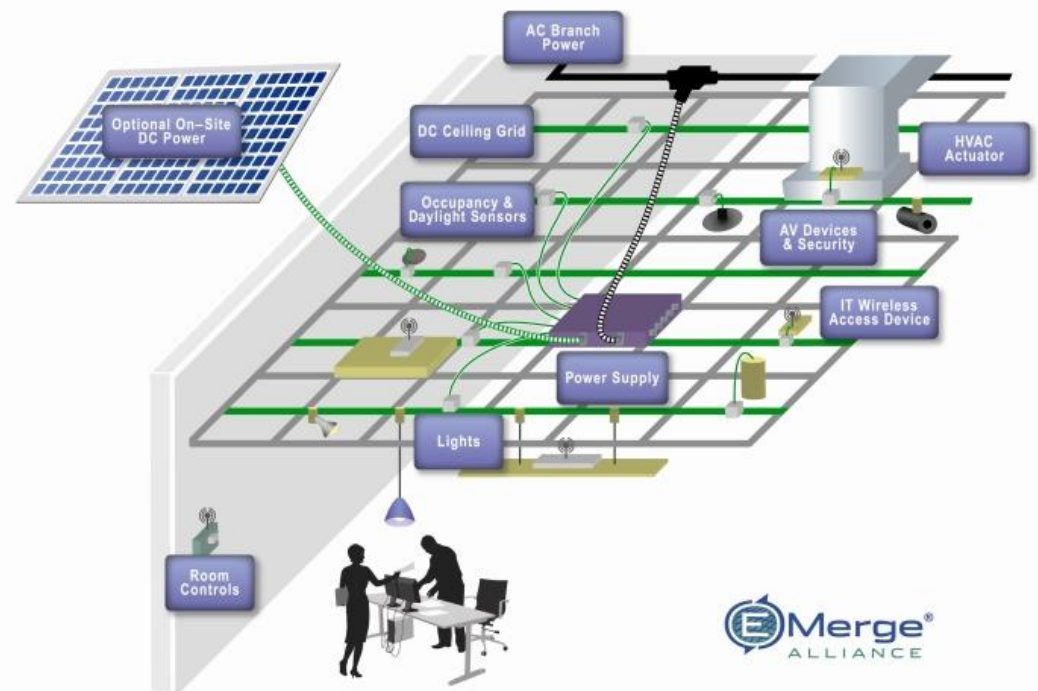
Other Emerging Technologies for GSA

Solar transpirator



Other Emerging Technologies for GSA

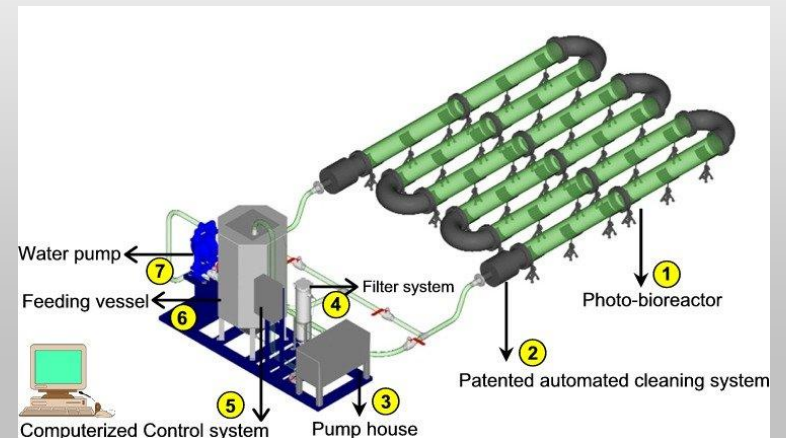
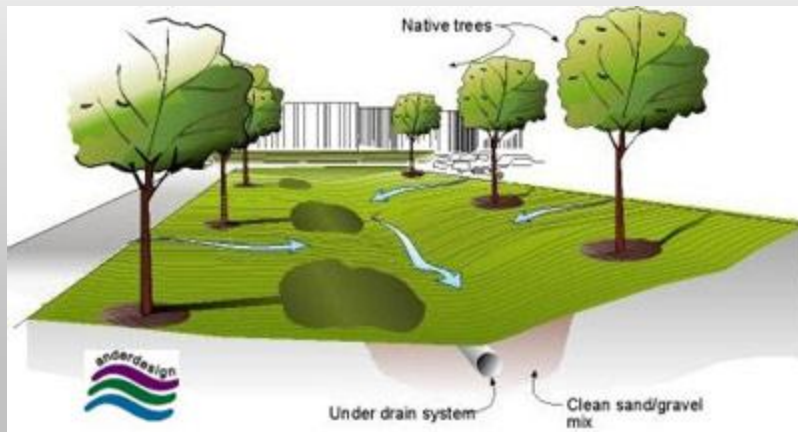
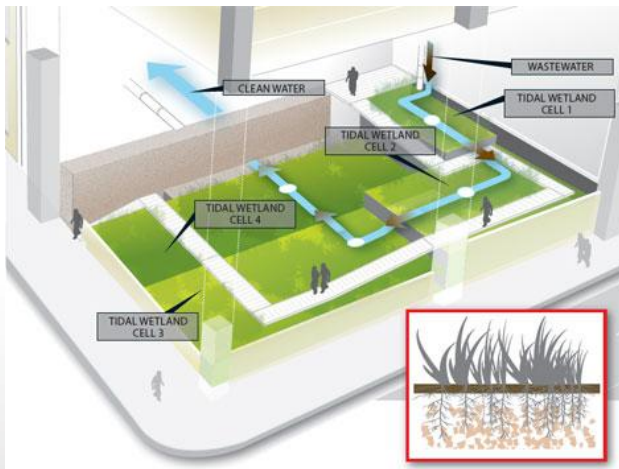
Low-voltage ceiling grid tied to DC power fed by renewables



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Other Emerging Technologies for GSA

DFC-wide water conservation study



Pacific Rim Region

"The Sustainable Solution"

GSA: Leading the Way

Danielle Bogni

Environmental Protection Specialist

Region 9

Got Goats?





Green Cafeteria

The sustainable cafeteria to be built-out in the North Los Angeles Federal Building has earned 85 LEED points in the design phase; well within the realm to achieve LEED Platinum certification.

Sustainable Design Board

SUSTAINABLE MATERIALS



1 ENVIRONMENTAL DESIGN
RECYCLED CONTENT AND SUSTAINABLE MATERIALS
FROM 100% RECYCLED AND SILENT

2 SUSTAINABLE DESIGN
SUSTAINABLE PROPERTIES AND SUSTAINABLE MATERIALS



3 RECYCLED CONTENT
RECYCLED CONTENT MATERIALS WITH
RECYCLED GLASS INSULATION



4 SUSTAINABLE DESIGN
SUSTAINABLE PROPERTIES AND SUSTAINABLE MATERIALS



5 SUSTAINABLE DESIGN
SUSTAINABLE PROPERTIES AND SUSTAINABLE MATERIALS

6 SUSTAINABLE DESIGN
SUSTAINABLE PROPERTIES AND SUSTAINABLE MATERIALS



1 WATER CONSERVATION
WATER AND TOILETS WILL REDUCE WATER
CONSUMPTION BY 50% (OR 10% IF THE PARTS ARE)

2 WATER CONSERVATION
WATER CONSERVATION IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT

3 WATER CONSERVATION
WATER CONSERVATION IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT

WATER CONSERVATION



1 ENERGY CONSERVATION
ENERGY CONSERVATION IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT

2 ENERGY CONSERVATION
ENERGY CONSERVATION IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT

3 ENERGY CONSERVATION
ENERGY CONSERVATION IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT

ENERGY CONSERVATION



INNOVATIVE WASTE MANAGEMENT

1 WASTE MANAGEMENT
WASTE MANAGEMENT IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT



2 WASTE MANAGEMENT
WASTE MANAGEMENT IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT



3 WASTE MANAGEMENT
WASTE MANAGEMENT IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT

4 WASTE MANAGEMENT
WASTE MANAGEMENT IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT



1 INFORMATION AND DISPLAY
INFORMATION AND DISPLAY IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT

2 INFORMATION AND DISPLAY
INFORMATION AND DISPLAY IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT



3 INFORMATION AND DISPLAY
INFORMATION AND DISPLAY IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT

4 INFORMATION AND DISPLAY
INFORMATION AND DISPLAY IS AN IMPORTANT
SUSTAINABLE DESIGN CONCEPT

INNOVATION AND EDUCATION

Turf Replacement

This effort earns LEED certification credits and saves approximately 1.4 million gallons of water per year.

This amounts to a cost savings of approximately \$24,000 per year, including water, energy and maintenance.



Bloom Energy

- 12 Bloom Energy Servers at the Adobe Headquarters in San Jose, California
- Each server is the size of a parking space, containing thousands of bloom fuel cells
- Currently researching the application of a bloom box at the Chet Holifield Federal Building





PV Installations

Calexico Land Port of Entry

- 500 kW array

Richard H. Chambers U.S. Courthouse

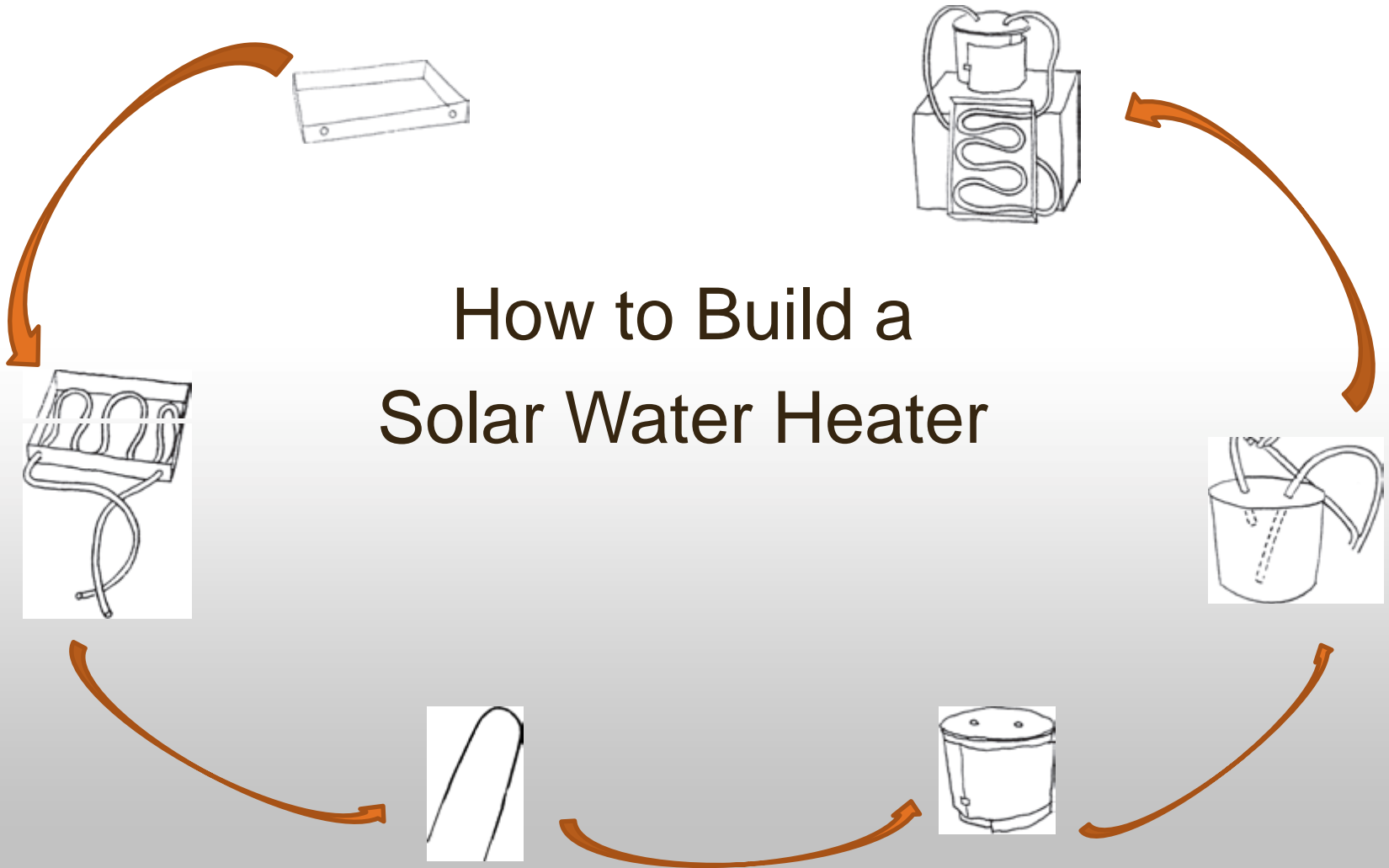
- 44.3 kW array

Chet Holifield Federal Building

- 908 kW array
- Provides solar hot water for the cafeteria, gym and childcare center

After School Special

How to Build a Solar Water Heater





Greening of the Access Store

- FAS is improving the Access Store. It will only offer green products.



Recycled Water

- Chet Holifield Federal Building
- Proposed for Ronald Dellums Federal Building

NORTHWEST/ARCTIC GREEN

“The Sustainable Solution”

Integrated Sustainability Program Management

Peter Bruck

Sustainability Program Manager

Region 10



Six Key Elements

- Regional Sustainability Advisory Team
- Regional Sustainability Council
- R10 LEED-EB program
- Facilities Green Teams
- Sustainability Training
- Sustainability Website

Regional Sustainability Advisory Team

- Includes RA, RCs, SLT green champion, and Sustainability Program Managers from FAS and PBS
- Provides strategic policy and direction to the Northwest/Arctic Green program via the Regional Sustainability Council



Regional Sustainability Council

- Main coordinating body for the region's sustainability activities
- Council has three main functions:
 - Convey policy, direction, and information from Central Office to the region
 - Integrate sustainability practices into all regional business lines in a seamless manner
 - Ensure key elements of the program are implemented in a coordinated effort



R10 LEED-EB Program

- LEED-EB as a framework for how buildings are operated and maintained
- The program will be introduced in phases as coordinated through the council
 - Phase 1: LEED-EB credits for alterations
Change specs, SFOs, contract language, etc.
 - Phase 2: Collect data and responses
 - Phase 3: Analyze data and make adjustments
 - Phase 4: Certify (Re-certify)



Facilities Green Teams

- Uniform protocol for establishing green teams at owned and leased buildings
- Focus is how tenants use the building, and how to support both GSA and tenant agency sustainability objectives (SSPP)
- Provide “toolbox” for Green Teams
 - Tips for getting started
 - Roles and responsibilities
 - Building measurement visuals



Sustainability Training

- Premise: A solid foundation in the fundamentals of sustainability will hasten the integration of sustainability practices throughout the region
- Sustainability awareness training is required for all PBS and FAS associates in R10
- Five levels of training with different tracks supporting division-specific objectives
- Coordinated with other program elements



Sustainability Website

- Primary means for communicating sustainability information and initiatives that have been vetted by the council
- Resource documents, links, training schedules, general announcements, etc.
- Add content to external webpage for Facilities Green Team



Thank You for Your Attention

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